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MODIFICATIONS IN THE VENETIAN TURPENTINE METHOD.

BY C. M. HOPFINGER.

Heretofore in working with the Venetian Turpentine method, fused calcium chloride only has been used as the drying agent in the concentration of the turpentine. There are however, other substances that have greater affinity for alcohol and alcohol vapor than calcium chloride. Definite compounds of alcohol and calcium chloride, as also of alcohol and zinc chloride are formed in which the organic substance plays the role of alcohol of crystallization, the double compounds being analogous to those formed with water when the latter takes the part of water of crystallization. Moreover, just as these later substances liquify in their own water of crystallization and absorb even more than corresponds to the definite compounds, so alcohol behaves towards the haloid salts of zinc and calcium. Zinc nitrate would serve perhaps as well as the chloride unless oxidation products were formed. Another compound absorbing alcohol in the same manner as these mentioned is barium hydroxide.*

Sulphuric acid behaves in a different way, absorbing alcohol

* Some of these alcoholates, or in some cases ethylates, are the following, LiCl $4C_2H_5(OH)$ with wood alcohol LiCl $3C_2H_5(OH)$, $MgCl_2$ $6C_2H_5(OH)$, $Mg(NO_3)_2$ $6C_2H_5(OH)$, Na_2S $C_2H_5(OH)$, $CaCl_2$ $4C_2H_5(OH)$, also $CaCl_2$ $3C_2H_5(OH)$ when dried over H_2SO_4. $SnCl_4$ $2C_2H_5(OH)$ when heated gives off ether $(C_2H_5)_2O$, ethyl chloride, C_2H_5Cl; a compound C_2H_5O $SnCl_3+C_2H_5(OH)$ is formed also. $TiCl_4$, $PtCl_4$, SeO, $AsCl_3$, $SbCl_5$ $CuSO_4$, take up one molecule of $C_2H_5(OH)$ to form a compound. KOH forms the compound KOH $2C_2H_5(OH)$.

BaO and CaO form compounds which change to the ethylates, $(C_2H_5O)_2Ba$, etc. Wood alcohol acts somewhat similarly. I have not been able to discover whether a definite crystallizable compound of zinc chloride and alcohol has been isolated.

† July 15, 1912.—Pages 249 to 264.

with the formation of ethyl sulphuric acid, according to the equation,

$$\begin{matrix} HO \\ HO \end{matrix}\!\!\diagdown\!\!\diagup SO_2 + (C_2H_5)OH = \begin{matrix} (C_2H_5)O \\ (HO) \end{matrix}\!\!\diagdown\!\!\diagup SO_2 + HOH$$

Barium hydroxide seems to have but slight attraction for large quantities of alcohol and may be omitted from consideration.

Wood alcohol is also thus absorbed by all the above mentioned substances and hence "Synthol" substituted for absolute alcohol of late, because cheaper, can be as readily used in the Venetian Turpentine method with any of the above-mentioned chemicals. One of the best drying agents is zinc chloride. Although at first this does not seem likely, because the calcium chloride is far more porous, practical experiments show that this drawback is quite overcome by the greater attraction of the zinc chloride for the alcohol. When comparing the value of the zinc chloride with calcium chloride in this respect the absorption is more rapid in the case of the former. Other experiments show too, that a mixture made by fusing the zinc chloride and the calcium chloride together, worked better than the calcium chloride; but evidently not because of the increase of porousness, as this fused mixture is anything but porous.

Again, it was found that a mechanical mixture of the separately fused zinc chloride and calcium chloride also exceeds the calcium chloride as a drying agent. Sulphuric acid because of its affinity for alcohol appeared to have drying powers equal to the above-mentioned substances, but proved impracticable, because of its destructive effect upon the stain.

Results show that zinc chloride alone, or in combination (with calcium chloride), and sulphuric acid, increase the rapidity of absorption by one-half the time required when using calcium chloride. The greater the free surface of the drying agent, the more closely the vessel is stoppered, and the higher the temperature, the greater will be the available vapor tension of the alcohol, and therefore the more rapid the absorption.

The following table shows the time, as exact as could be determined, for the concentration of the turpentine, under the conditions which follow. In table No. 1, Hempel's vacuum dessicator was used, without applying diminished pressure, of course, and in table No. II, large covered crystallizing dishes. Through the whole

series of experiments the remainder of the conditions were the same. Volume of Hempel's dessicator, 4200 cc; volume of crystallizing dishes, 2450 cc; amount of 10 per cent. Venetian Turpentine for each experiment, 25 cc; average free surface of the turpentine, 16sq. cm; and average temperature, 25°C. The amount of drying agent in each case was determined by the molecular weight of substance, 880 gm. calcium chloride being taken, and in case of the other agents an amount relatively proportionate.

These drying agents were not changed after each concentration, but kept for the whole series to ascertain the relative falling off in value after concentrating a number of the solutions. In the tables, the Roman numerals signify the successive turpentine preparations placed in the drying vessel, all of the same volume at start and finish, and following each other immediately in point of time. The figures in each column mark the time required for each concentration.

TABLE NO. I. (Dessicator, air-tight).

Order of Concentration	$ZnCl_2$ and $CaCl_2$ fused together	Machanical mixture of $ZnCl_2$ and $CaCl_2$ fused separately	Fused $ZnCl_2$	Fused $CaCl_2$	H_2SO_4
I.	24 hours	32 hours	25 hours	41 hours	32 hours
II.	35 "	41 "	39 "	73 "	40 "
III.	44 "	46 "	45 "		44 "
IV.	47 "	49 "	49 "		
V.	51 "	52 "			

TABLE NO. II. (Dessicator not air-tight).

Order of Concentration	Fused $ZnCl_2$	Fused $CaCl_2$	H_2SO_4
I.	40 hours	58 hours	37 hours
II.	44 "	75 "	41 "
III.	47 "	90 "	45 "
IV.	50 "		

From the above data we can satisfactorily conclude that for all practical work in the Venetian Turpentine method, either zinc chloride, or a mixture of zinc chloride and calcium chloride fused together, or a mechanical mixture of these two separately fused is better by far than calcium chloride. These three reagents have about the same drying powers, nearly equaling each other

after sixth or seventh time used, although differing a little more at the beginning. Ten concentrations, according to conditions already given, seem to be the limit of practicability, since at this stage the reagents have liquified to such an extent, that the time for concentration exceeds the time required to fuse the drying substances again and begin a new series of concentrations.

In the case of sulphuric acid the mere concentration is satisfactory, but at the end of the process, the stain has been almost wholly destroyed. Perhaps for the acid stains this difficulty would be removed, yet on the whole it would hardly be desirable since other agents of equal drying power can be substituted.

Upon examination of the material when the experiment is completed, no evidences of plasmolysis can be detected, and this action might be suspected because of the short time required in the process. Throughout this experiment, Cladophora and Oedogonium were used with equal success. In estimating the time required by this shortened process, it was found that a specimen can be brought up ready for use in practically two days.

In preparing material by the Venetian Turpentine method, much time and trouble can be saved, if after killing with chromo-acetic acid and washing well, the specimen is brought up in the alcohols, in 10, 20, 35, 50, 70, 85 and 95 per cent. successively, instead of using the glycerine process, incurring the risk of traces of glycerine in the material, preventing proper staining. The time is hereby also lessened, as a few minutes is sufficiently long for the specimen to remain in each of the graded alcohols, when filamentary algae and the like are used.

If at this stage the specimen is placed in the 10 per cent. Venetian Turpentine, without previously being stained, as has been heretofore considered necessary, and then a given amount of the concentrated alcoholic solution of the Magdala Red added to the turpentine, and the whole placed in the drying vessel, the material will in the end be perfectly stained, the process of staining going on while the turpentine is concentrating. In performing these experiments Magdala Red alone was the stain used, and ten drops was found to be the minimum amount required in each experiment.

In trying to double stain, using Magdala Red and Aniline Blue, by pouring the concentrated alcoholic solutions of the stains together, then introducing the specimen, I succeeded a few

times out of many trials, showing that generally the successful double staining by the above method is accidental, yet anticipating practical success, should we find the exact proportion according to which the stains should be mixed, even going so far as to insure success by the shortened process, recommended by the above experiments, in the case of the Magdala Red.

As to the reagents, an apparent objection to the use of fused zinc chloride instead of calcium chloride may be that the former on being fused again after absorption of alcohol seems to allow this to come off with great difficulty, so that the mass chars to a blackish substance, because of separation of carbon. After second fusion the zinc chloride does not seem to reabsorb alcohol as well as before, possibly because basic zinc chlorides are formed and some of the chlorine goes off as ethyl chloride (C_2H_5Cl). Addition of hydrochloric acid to decompose these basic compounds supposed to be found does not improve matters much.

The fused mixture of zinc chloride and calcium chloride in equal parts does not behave in this way; no charring whatever is noticed no matter how high the temperature is raised in fusion. Since moreover, the mixture is also more active we may conclude that it is the best dealcoholizer of them all. Whichever of these salts or mixtures of them is used, the fusion after the first absorption of alcohol may be made in either an iron or a porcelain vessel. Zinc chloride and mixtures of it show a tendency to absorb iron from the vessel during fusion, this iron appearing to be held in the colloidal form. This however does not deteriorate the absorptive power, though the fused mass appears to be steel gray in color. Care should be exercised to prevent the escaping alcohol vapors from catching fire in fusion, as charcoal is deposited, giving the preparation an unsightly appearance.

ERIGERON IN NORTH DAKOTA.

By J. Lunell.

In the year 1818 Nuttall published in Vol. II. of "The Genera of North American Plants" on p. 147 and 148 two new *Erigeron* species, *E. asper* and *E. glabellus*. During the last 25 years there has been considerable confusion as to what plants

Nuttall actually meant when introducing these species names, and Asa Gray in his Synoptical Flora suppressed *E. asper*. Dr. P. A. Rydberg in his Flora of Colorado retained *E. glabellus* (as to the name), but the manuals suppressed it and accepted *E. asper*, as they did not believe in the existence of two separate, independent species. The plains of Missouri in North Dakota furnished the types for these two Nuttallian species. In taking up the subject of them as they present themselves to me in their home country, I acknowledge in the first place my debt to Dr. Edward L. Greene for his valuable advice and suggestions and his willingness on his own initiative to place precious material at my disposal.

1. *Erigeron asper* Nutt.

Nuttall ranges *E. asper* (l. c.) under "§1. Stem simple," and this is his original description:

"3. **asperum*. Hirsutely scabrous; stem about 2-flowered, slender; leaves lanceolate-acute and entire; flower hemispherical, white. HAB. On the plains of the Missouri. Flowering in August. Stem solitary, scarcely 12 inches high, covered with short and very hispid hairs in common with the leaves. Leaves narrow; radical ones spatulate-lanceolate. Peduncles 2 or 3, subterminal, the lateral one longest". . . . "Rays numerous, white. Pappus double, interior simply pilose, of about 20 rays, much longer than the smooth seed, slightly rufescent."

Dr. J. F. Brenckle of Kulm, La Moure County, of this state, has kindly withdrawn from his herbarium and lent me some daisy material representing no doubt the real plant of Nuttall. Two plants collected by him on June 20, 1903, part of his sheet numbered 38, from low prairie at Kulm, and four small plants out of five from another sheet collected by O. A. Stevens at Valley City, on June 8, 1910, the last ones defined by the collector as *E. caespitosus* Nutt., have the "hirsutely scabrous" indument and also the "white rays" as outlined in Nuttall's description. The stems have from 1 to 4 flowers. Nuttall's plant was collected in August, and though I have no doubt that some belated individuals would linger into that month, the real flowering period for this species and its allies is June and the first part of July. The Valley City plant belongs to the Red River of the North basin (Sheyenne River), but the Kulm plant is from a territory

watered by the James River, a tributary to the Missouri.

A hundred miles further northward there is an ally of this daisy, modified as follows:

2. **Erigeron multicolor** sp. nov.

Caules 1–3, simplices, floribus 1–5 ornati, graciles, 5–30 cm. alti, una cum foliis tenuiter vel modice pilis mollibus repandis appressis vestiti. Folia radicalia spatulato-lanceolata, in petiolos longos alatos sensim attenuata, integra vel dentata. Folia caulina angusta, lanceolato-acuta, integra, inferiora saepe 10 cm. longa vel longiora, usque similitudinem bractearum sensim reducta, vel folia caulina omnia ad bracteas accedentia. Flores semisphaerei, diametro inter extremitates radiorum peripherales 2–2.5 cm., bracteis exterioribus obscuris hispidis, radiis numerosis albis vel rubicundis vel lavandulaceis.

Stems 1–3, simple, 1–5-flowered, slender, 5–30 cm. high, in common with the leaves scantily or moderately covered with soft hairs, turned upwards and appressed. Radical leaves spatulate-lanceolate, gradually tapering to long, winged petioles, entire or dentate. Stem leaves narrow, lanceolate-acute, entire, the lower often 10 cm. long or more, gradually reduced in size until bract-like, or all the stem leaves resembling bracts. Flowers hemispherical, 2–2.5 cm. in diameter between the distant ends of the rays, with dark, hispid outer bracts and numerous white to pink or lavender colored rays, often of as many different shades as the plant has flowers.

Common in moderately damp pasture land and in similar localities where the grass is scanty. I have one typical sheet of fully developed plants collected as early as June 8, 1901, and my second type sheet is dated June 24, 1906, both from Leeds, Benson County.

I have several specimens collected within a narrow radius of Leeds showing a wide difference in indument, size of plants, and size and color of flowers. Whatever possibilities these offer as new matter, they have to be corroborated by a close study of additional specimens to be collected during the coming season.

The next species to be taken into consideration is

3. *Erigeron glabellus* Nutt.

The following is the author's own description (Genera l. c.): "6. **glabellum.* Perennial; leaves linear-lanceolate, entire,

smooth and acute; radical long petiolate, spathulate-lanceolate and nerved; upper part of the stem and hemispherical calix pubescent; stem 3 to 5-flowered, peduncles axillar and terminal. HAB. On the plains of the Missouri, (around Fort Mandan, abundant). Flowering in August. Stem 12 to 13 inches high, simple, smooth below; lower leaves of the stem much attenuated below, 3 or 4 lines wide, smooth; peduncles about 2 inches long, pubescent; flower the size of a daisy, pale blue; rays very numerous. Seeds smooth; pappus double, exterior whitish, interior short, simply pilose and rufescent."

This is decidedly a plant of late summer, commencing to flower in the last part of July, when *E. asper* is fading, and it lasts until it is killed by the early frosts. Stems solitary or several, ascending, smooth below, sparingly pubescent midways, and more densely so in the upper part, usually with short, spreading, or even retrorse hairs, and 1 to 5-flowered. Some radical leaves are acute, others obtuse, and all have a pair of lateral nerves running parallel to the margin for the major part of its length. The leaf margins are smooth or sparingly and irregularly ciliate. The author's "size of a daisy" must be 2–3 cm. in diameter between the peripheral ends of the rays. The color of the rays is the same for all flowers of the same plant, but varies for different plants, and besides the pale blue ordinary shade an admixture of lilac seems to be just as prevalent. This species is extremely pretty, especially when its flowers are well developed, and no daisy within this state can successfully rival it.

I am just looking at a beautiful specimen of Dr. Greene's which he collected early in its season (July 22) in the summer of 1890, at Carberry, Manitoba, as stated in Leaflets II. (1912) p. 207. It is perhaps somewhat taller and more luxuriant than my North Dakotan plants would be at such an early date, and its rays have adopted a rather different natural shade, but nobody can or would attempt to question its genuineness.

4. *Erigeron pumilus* Nutt.

This is a plant preferring the gravelly plains and the high, gravelly hills, and comes from the region whence Nuttall had it (Genera II. (1818), p. 147).

5. **Erigeron obscurus** sp. nov.

Caules 1–4, erecti et rigidi, 2–4 dm. alti, inferne fusci, usque

apicem paene simplices, deinde corymboso-ramosi, pilis albis densis diffusis vel adscendentibus infra vestiti qui inflorescentiam versus molliores et appressi fiunt. Folia obscure viridia, pubescentia densa, molli, appressa vestita, basilaria et in caule dimidio inferiore spatulata vel oblonga vel lanceolata, petiolis perlongis, strigosis, integra vel remote serrata; folia caulina superiora linearilanceolata, amplitudine sensim reducta, summa saepe bracteis tantum similia. Flores 0.5–1 cm. diametro, radiis albis 2–4 mm. longis, 0.5 mm. latis, bractearum series exterior pilis diffusis vel appressis hispidulosior. Inflorescentia corymboso-cymosa, angustior et congesta.

Stems 1–4, erect and stiff, 2–4 dm. high, very leafy, dark brown in the lower part, simple almost to the top, then corymbosely branched, densely covered with white, spreading or ascending hairs below, which toward the inflorescence become more soft and appressed, almost velvety to the touch. Leaves of a dull, dark green, with a dense, soft, appressed pubescence, at the base and on the lower half of the stem spatulate or oblong or lanceolate with strigose petioles of their half or whole length, entire or sparingly serrate; upper cauline leaves linear-lanceolate, gradually reduced in size, the uppermost often mere bracts. Flowers 0.5–1 cm. across, with white rays 2–4 mm. long, 0.5 mm. wide, and the outer series of bracts rather hispidulous with spreading or appressed hairs. Inflorescence corymbosely cymose, rather narrow and congested.

This daisy was found by the writer on July 17, 1910, in a natural meadow along a coulée in the vicinity of Leeds, Benson County. As it is a near relative of *E. strigosus* Muhl., it was at first suspected of being identical with this species and introduced with grass seed. But at close inspection its different indument on stems and involucral bracts, its dull green color, its crowded foliage and inflorescence and its small rays (4–7 mm. long in *E. strigosus*) were found to be minute indument on the stem, the light green, distant leaves, the glabrate involucral bracts, the patulous inflorescence and the taller plants of this weed, so far undiscovered in this vicinity. I believe that this daisy of ours is a native western plant.

6. *Erigeron philadelphicus* L.

Common in wet soil. A very rank, large and lax form grows

in rich, well drained soil in the Turtle Mountains. Sp. Pl. 863 (1753).

7. *Erigeron racemosus* Nutt.

Occasional along water courses. Trans. Am. Phil. Soc. 7: 312 (1841).

Leeds, North Dakota.

A QUESTION OF NOMENCLATURE.

By J. A. Nieuwland.

After having called attention to the fact of the priority of Schmidel's name *Thelypteris** over Adanson's *Dryopteris* or Schwartz's *Aspidium*, on the basis of 1753 as the "starting point" of nomenclature, several objections by well known botanists were made to me supposedly founded on certain codes or opinions. Followers presumably of the Vienna Code claimed that Schmidel's generic name like Adanson's was not made accompanied by the simultaneous publication of a *binary specific name, or without any direct reference to such in another work* and designating in the latter case the referred binary as type of the new genus. As far as I can find on consulting botanists it would seem that the followers of the so-called American Code will accept the validity of the genus on the latter of the two alternatives, or even when it is perfectly clear that a given plant is meant whether reference to any binary is made or not.

For the followers of the American Code, a system typified by Britton's Manuals and other works emanating from the New York Botanical Garden, there can be no possible objection to *Thelypteris;* for Schmidel made an indubitable and unmistakable reference in synonymy to the first edition of Linnaeus' Species Plantarum, as also the same in the tenth edition of the Systema Naturae, actually quoting the Linnaean "specific name."†

The makers of the Vienna Code, however, have arbitrarily decided that since even the Linnaean generic diagnoses were

* Am. Midland Naturalist, Vol. I., p. 224, etc.

† "Acrostichum fronde pinnata, pinnis pinnatifidis integerrimis Linn. Spec. p. 107. N. 21. Syst. Nat. Ed. X. p. 1320. n. 21."

not given in the Species Plantarum, these are to be considered, as exception to the rule," to be published in conjunction with and in reference to the Genera Plantarum of 1754, where alone generic diagnoses are found. Of course this arbitrary arrangement was evolved to make the code rule worth while, and at the same time have some show of consistency, not to say reason, for throwing out many valid generic publications of Adanson and other authors. No thinking person will question the right of code makers to make arbitrary rules, even though they emphatically declare that they do not, because in the very nature of things, when reason and absolute historical priority, which alone deserve consideration, are put aside, we really could not have such a diversion as a code without empirical rulings and arbitrary decisions. If reason be rejected as a guide in nomenclature, then we can have no guide at all unless an arbitrary date or an arbitrary author or set of arbitrary agreements be put up as fetiches to decide validity of biological names.

Granting for the sake of argument, and admitting even that Linnaeus' own trivial binary terminations in the Species Plantarum of 1753 are made valid because published in reference to the generic diagnoses in another work, (Gen. Pl. 1754) then we still have another great difficulty, if we are expected to live up to the rule that trivial binaries must accompany generic publications. There are several generic names of the Genera Platarum of 1754 which are monotypic according to the 1753 edition of the Species Plantarum, *and in fact were not, as the rule requires, accompanied even in the latter work by a binary trivial name.* If therefore it be made necessary for the validity of publication of a genus name, that it be made in connection with a reference to a binary trivial then we are forced to the conclusion that the Linnaean genera *Erythronium, Mussaenda Hydrocharis,* and *Hemerocallis* were not published in 1753 or 1754, and not for a long time after in one or other case at that. These generic names *were not published in reference to a binary,* because we will look in vain for such in the Species Plantarum. In fact the names under the genus captions are *Erythronium Dens canis, Mussaenda fructu frondoso, Hydrocharis Morsus ranae,* and *Hemerocallis Lilio Asphodelus,* and these names reprinted as found in the Species Plantarum can not by any juggling of hyphens be forged into real binaries without the perpetration of the most disgraceful thing a scientist can

be guilty of—a lie. An objection may at first sight appear in case of the last, *Hemerocallis*, where a second name *H. Liliastrum* occurs, and which has been since segregated into another genus. We admit the force of the objection only in case that the name *Hemerocallis* arbitrarily and contrary to all reasonable precedent, be reserved for the segregated genus of which *H. Liliastrum* Linn. now forms a component. This would mean more and more unreasonable changes making confusion worse confounded; for *H. Lilio Asphodelus* is the undisputed type of the Linnaean genus. Not one perhaps of all the staunchest followers of the supposed principle of the Vienna Code has ever even for a moment thought of questioning the validity of the Linnaean genera *Erythronium*, *Mussaenda* and *Hydrocharis*, for they are attributed to him in all books that have them. Yet the very rules fabricated require that we reject these

It follows then that it is a very difficult matter for code makers to elaborate rules which are expected to make Linnaeus fall in line with their arbitrary decisions. It sometimes seems a pity that he never could have foreseen that 1753 was to be the beginning of botanical nomenclature. With codes as with arguments if one starts wrong one must pile up more and more inconsistencies to try to make an unreasonable proposition seem plausible. If this were a fable we would point the obvious moral that it is pleasant to make arbitrary rules only when we do not expect to have them kept.

OUR WINTER BIRDS.

The chief event in the bird world this winter was the presence of the Robin in each month and notably in January and February. The birds seen here were doubtless those having the most northern range, the severity of the weather having driven them south to places where they could find water. The individuals observed in this locality were usually seen near the edge of a lake where the water did not freeze. That the Robins could endure very cold weather, when the temperature was many degrees below zero, shows that it is not the severity of a climate that caused the birds to migrate, but the scarcity of food and water. This is the only

winter during which the writer has found the Robin. The largest number observed on any day was six.

The weather continued cold until March 14, when the temperature rose to 41°, and the Killdeer and Robin arrived from the south. The appearance of the Redpoll on March 5 was the first time this species was observed by the writer. The absence of the Nuthatch since Feb. 24 shows that this species has its period of migration.

DECEMBER.

Birds not seen on any day:

Goldfinch
Hell Diver
Snowflake
Chickadee
Evening Grosbeak

Birds seen on the dates after their names:

Downy Woodpecker, 1, 3, 25, 27
Snowbird, 1, 11, 12, 13, 25, 28.
Tree Sparrow, 1, 25
Robin, 11
Brown Creeper, 4, 10, 11, 13, 15, 18, 22
Screech Owl, 14, 18
Song Sparrow, 2
Cardinal, 11

Birds seen every day except the dates after their names:

Crow, 4, 5, 6, 14, 15, 17, 20, 23, 26, 27, 28, 30, 31
Blue Jay, 3, 6, 7, 8, 14, 20, 24, 26, 30
White-breasted Nuthatch, 1, 2, 5, 6, 11, 12, 14, 16, 20, 23, 26, 27, 30, 31

Total number of species seen in December, 11.

JANUARY.

Birds not seen on any day:

Brown Creeper
Chickadee
Goldfinch
Screech Owl

Birds seen on the dates after their names:

Downy Woodpecker, 18, 19, 20, 22.
Snowflake, 16.
Blue Jay, 1, 2, 15, 21, 22, 23, 24, 26, 30, 31.
Robin, 17 to 24, 27, 28, 30
Snowbird, 18, 22, 29
White-breasted Nuthatch, 5, 6, 7, 9 to 13, 15, 17 to 20, 24, 25, 30.
Tree Sparrow, 31
Crow, 2, 11, 18, 21, 22, 23, 24, 26, 27, 30 ,31

Total number of species seen in January, 8.

FEBRUARY.

Birds not seen on any day:

Snowbird
Screech Owl
Goldfinch
Snowflake
Chickadee

Birds seen on the dates after their names:

Crow, 3, 6, 7, 12 to 18, 22 to 25, 27, 28
White-breasted Nuthatch, 2, 11, 14, 24
Blue Jay, 2, 5, 6, 9, 11, 14 to 17, 24, 25, 27, 28, 29
Brown Creeper, 13
Downy Woodpecker, 6, 16, 20
Tree Sparrow, 15 to 18, 20, 23, 24, 27, 28
Sparrow Hawk, 14

Total number of species seen in February, 8.

MARCH.

Birds not seen on any day:

White-breasted Nuthatch,
Brown Creeper

Birds seen on the dates after their names:

Crow, 1 to 4, 7 to 10, 12
Blue Jay, 2, 4, 8, 9, 11, 12, 13
Robin, 3
Downy Woodpecker, 7
Hairy Woodpecker, 2
Snowflake, 2, 3
Redpoll, 5
Tree Sparrow, 1

Total number of species seen up to March 14, 8.

Total number of species seen during the winter, 15.

MIGRATION OF OUR BIRDS IN THE AUTUMN OF 1911.

It will be seen by making a comparison between the autumn migration in 1909 and that of 1911 that the dates are very close in the case of some species, while in others there is seen to be a difference of three weeks or a month. Is the great disparity in some dates due to an actual difference or is it because the writer has failed to observe the correct dates in such instances? With a few species the writer is willing to admit that he may have missed the right dates by many days, but when the number of species showing such disparity in their time of migrating is not few, he believes there was a considerable difference in the time of leaving in the two seasons.

As to what was the cause of such a wide gap in the dates, the

writer is unable to explain. He thinks it was not due to milder weather in one year, for while there was a later date for many species in 1909, with others, the date was earlier than in 1911.

The following species were not observed after August 14: Red-winged Blackbird, Yellow Warbler, Orchard Oriole, Red-eyed Vireo, Yellow-throated Vireo, Maryland Yellowthroat, Dicksissel, Bobolink, Scarlet Tanager, Barn Swallow, Nighthawk, Shrike, and Fox Sparrow.

AUGUST

22 Alder Flycatcher
22 Least Flycatcher
22 Black and White Warbler
23 Purple Martin
27 Yellow-bellied Flycatcher
30 Hermit Thrush arrived
31 Myrtle Warbler arrived

SEPTEMBER

1 Crested Flycatcher
1 Red-headed Woodpecker
3 Baltimore Oriole
3 Kingbird
4 Catbird
5 Sapsucker
6 Vesper Sparrow
10 Cedarbird
10 Wood Pewee
16 Yellow-billed Cuckoo
17 Brown Creeper arrived
17 Snowbird arrived
18 Cowbird
20 Brown Thrasher
20 Yellowlegs
21 House Wren
22 Golden-crowned Kinglet arrived.
24 Redstart
24 Pine Warbler
27 Warbling Vireo
27 Indigo Bird
27 Hummingbird
27 White-throated Sparrow arrived
29 Black-throated Green Warbler arrived

OCTOBER

3 Spotted Sandpiper
7 Chimney Swift
9 Chickadee
12 Chipping Sparrow
14 Killdeer
14 Winter Wren arrived
15 Mourning Dove
16 Flicker
17 Phoebe
18 White-throated Sparrow
20 Purple Grackle
21 Hermit Thrush
23 Meadowlark
25 Kingfisher
28 Hell Diver
29 Myrtle Warbler
29 Field Sparrow

NOVEMBER

1 Bluebird
1 Canada Goose
4 Winter Wren
8 Cardinal
8 Towhee
15 Song Sparrow
15 Tree Sparrow arrived
18 Golden-crowned Kinglet

21 Robin
24 Goldfinch
27 Loon
31 Brown Creeper

Total number of migrants seen, 55.

SILENE CONICA IN MICHIGAN.

By J. A. Nieuwland.

As far as I have been able to find only two places in the region covered by Gray's and Britton's manuals have reported the presence of the European plant adventive to America. I have found the plant so well established near Stephensville, Mich., (Berrien Co.), as to be likely to become a more or less noxious weed. It was growing abundantly in rather sandy well cultivated strawberry patches and along fences, about one and one half miles northwest of the village, about one mile from Lake Michigan itself and about five and one half or six miles south of St. Joseph, Michigan. As the plant at first sight seemed new to me I had gathered considerable material at the time. The specimens collected are No. 2713 of the University herbarium. Judging from the close aggregation of the plants, and the apparent health of the specimens, it would seem to be well adapted to the soil, and may become a weed that the farmer will have to reckon with if unchecked.

SYNONYMY ALTERATIONS.

Laciniaria scariosa media to replace *L. scariosa intermedia* (*Liatris intermedia* Lindl. Bot. Reg. t. 948).

Laciniaria scariosa Nieuwlandii septentrionalis to replace *L. scariosa Nieuwlandii borealis* (Liatris borealis Nutt. in Paxt. Mag. v.t. 27). And *Laciniaria scariosa borealis* (Nutt.), l. c., to replace *L. scariosa virginiana.*

Leeds, North Dakota.

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QUADRULA PARKERI, GEISER, A SYNONYM.

In my last published study* of the synonmy of *Tritogonia tuberculata*, I inadvertently overlooked Ortmann's nom. nov. *Quadrula Tritogonia*, 1909 (*Nautilus* XXII.: 101; *An. Carn. Mus.* V.; 193), which has nearly three years' priority over my name. Upon the premise, then, that the pronounced sexual dimorphism of *Tritogonia* does not entitle it to generic rank, and that on the basis of its gravid characters it is properly a *Quadrula*. *Quadrula Tritogonia* Ortmann, 1909 is the only name that can be applied in accord with the provisions of the International Code and all the common-sense principles of nomenclature.

S. W. GEISER,
Upper Iowa University.

SOME LOCAL ALBINO PLANTS.

BY J. A. NIEUWLAND.

While botanizing near Mineral Springs, Porter Co., Ind., May 30, 1912, I found several specimens of albino Hairy Phlox, (*Phlox pilosa* Linn.). Such plants are not unusual, but may be worthy of note. They were found along a road leading to the dunes of Lake Michigan in black marsh soil, together with numbers of normal plants. The flowers were perfectly white without the least trace of color in the corrolla, nor the usual darker tinge of purple on the parts of the inflorescence or stems. The perfectly green color of the stem was so notable that one of the unblooming plants was taken and, when transplanted proved to be a pure white-flowered specimen in bloom. I have frequently, and especially in the dune region met with pale-flowered plants in sandy sun-exposed places, but none were entirely snow white. In every other respect the albino resembled the purple flowered normal plants. A pressed specimen was secured for the University Herbarium (No. 10093) and several plants were brought home and planted in the University grounds. All but one died, possibly

* American Midland Naturalist II. 188–193 [1912].

because of injury to stems, and change to drier soil. One of the plants already referred to is at present in full bloom with a very large cluster of pure white rather smaller flowers.

On another trip June 15, 1911, from Lydick, Ind (St. Joseph Co.) to Galien, Mich. (Berrien Co.,) along the St. Joseph South Bend and Southern Railroad, I came upon a unique group of albinoes of various shades of *Tradescantia reflexa* Raf. The plants were growing on the very edge of the Valparaiso glacial lobe, along the railroad about four miles from Galien. There were about one hundred plants altogether of which very few had the typical blue petals of the normal plants. Most of them, about one-half, were pale blue, and about one-fourth of the total number were perfectly show white without the slightest trace of any other color except the yellow veins of the petals. The patch of plants extended over an area not exceeding 30 or 40 square meters. Though only roughly estimated in number there seemed here some apparent relation of Mendel's Law respecting the variants. A specimen was taken for the University Herbarium, (No. 2684) but none were transplanted.

In the low ground before coming to the glacial gravel deposit was found at the same time a striking specimen of albino of *Iris versicolor* Linn. not far from other normal Blue Flags. It was pure snow white with the exception of the delicate yellow veins on the perianth. There was no trace of the usual purple at the base of the stem. Its flower was rather smaller than usual, the peduncle longer and more slender and the leaves narrower than those of the blue flowered plants. Part of the plant was collected with flower for the herbarium (No. 2681). The fact of finding albinos of two species so close together as also the presence of a large number of one of these might suggest some factor in the soil as causing the phenomenon. On another occasion I have found a white flowered plant of *Tradescantia virginica* Linn. at Brookland, D. C., as also a perfectly white flowered specimen of *Prunella vulgaris* Linn. at the same place.